

U.S. Patent Application Serial No. **10/088,107**
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

REMARKS

Claims 1-20 are pending in this application. Claims 3, 10-16, 18 and 20 are currently withdrawn from consideration. No amendment to the claims is made herein.

Claims 10-16, 18, 19 and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention. (Office action paragraphs no. 2-3).

In the response dated December 19, 2003, Applicants elected group I, claims 1-9, 17 and 19, without traverse, as the Examiner confirms in paragraph no. 1. Therefore, **claims 10-16, 18 and 20** should be withdrawn, as indicated on the Office action summary page. Applicants therefore assume that the Examiner's listing here of **claim 19** as withdrawn is a typographical error. Applicants further note that claim 19 is rejected in paragraph no. 12 of the Office action.

Applicants also refer the Examiner to the clarification of the species elected as component (A), in the comments below in regard to paragraph no. 5 of the Office action.

Claims 4, 6 and 7 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office action paragraph no. 5)

The rejection of claims 4, 6 and 7 is respectfully traversed.

The Examiner states that the wording in claim 4 "recites A-1 and A absolutely identically,

U.S. Patent Application Serial No. **10/088,107**
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

and then [provides] for reaction of A-1 with A-2 to obtain a compound that has already been defined as A-1". The issue is apparently the same for claim 6.

Applicants respectfully submit that the Examiner is incorrect regarding the recitations of claims 4 and 6. Component (A) is "an anhydropolyamino acid having **at least one** ethylenically unsaturated double bond in a molecule". Component (A-1) is "an anhydropolyamino acid having **no** ethylenically unsaturated double bond in a molecule." Therefore, component (A-1) **cannot be the same** as component (A). Moreover, Applicants submit that the claims do not recite that (A-1) and (A-2) react to produce compound (A-1), which the Examiner has implied. "Anhydropolyamino acid having at least one ethylenically unsaturated double bond in a molecule (A)" is a reaction product of components (A-1) and (A-2).

To clarify the classification of (A), (A-1), (A-2), and (B), please refer to the following Table 1.

Table 1.

| | In the claim | In the specification | In the Examples |
|-------|---|--|---|
| (A) | an anhydropolyamino acid having at least one ethylenically unsaturated double bond in a molecule | | |
| (A-1) | an anhydropolyamino acid having no ethylenically unsaturated double bond in a molecule | anhydrides of polyaspartic acid (polysuccinimide) anhydrides of polyglutamic acid | Examples 1-8 polysuccinimide |
| (A-2) | a compound which has an ethylenically unsaturated double bond a functional group having reactivity with the anhydropolyamino acid | glycidyl methacrylate, glycidyl acrylate, acrylic acid, methacrylic acid, 2-methacryloyloxyethyl isocyanate, and 2-isocyanatomethyl acrylate | Examples 1-5 2-methacryloyloxyethyl isocyanate Examples 6-8 glycidyl methacrylate |
| (B) | a water-soluble monomer having an ethylenically unsaturated double bond | (meth)acrylic acid and its alkali metal salt, ammonium salt, (meth)acrylamide, N,N-dimethylacrylamide, 2-hydroxyethyl (meth)acrylate, N-methylol (meth)acrylamide, diethylaminethyl (meth)acrylate, maleic acid, fumaric acid, 2-sulfoethyl (meth)acrylate, 2-acrylamide-2-methylpropanesulfonic acid, 2-methacrylamide-2-methylpropanesulfonic acid, 2-sulfopropyl (meth)acrylate, 2-sulfopropyl butyl (meth)acrylate and its alkali metal salt, etc. | Examples 1-5 acrylic acid Example 6 Na sulfomethyl methacrylate Examples 7 and 8 2-acrylamide-2-methylpropanesulfonic acid |

U.S. Patent Application Serial No. 10/088,107
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

With regard to claim 7, the Examiner states that in claim 7, component (A-1) is polysuccinimide, but in the election of species, Applicants listed polysuccinimide as component (A). The Examiner is correct in this regard. However, Applicants submit that this is not an issue of indefiniteness in claim 7, but rather an issue with regard to which species was elected. Applicants therefore submit that claim 7 is not indefinite.

That is, Applicants incorrectly elected polysuccinimide as component (A), in that polysuccinimide is not in itself component (A). "Polysuccinimide" is not a compound having an ethylenically unsaturated double bond in a molecule and it cannot be "(A) anhydropolyamino acid having at least one ethylenically unsaturated double bond in a molecule". Polysuccinimide is an example of component (A-1). Applicants were attempting to elect the reaction products of polysuccinimide as component (A). However, the election did call for the election of a single chemical species as component (A). Applicants apologize for their misunderstanding of the election requirement, and here clarify the species (A) to be elected to be **(A) an anhydropolyamino acid having at least one ethylenically unsaturated double bond in a molecule obtained by reaction of (A-1) polysuccinimide and (A-2) 2-methacryloyloxyethyl isocyanate**. This election is based on Example 1 from page 23, line 29, to page 24, line 19.

Again, Applicants submit that this is not an issue of indefiniteness in the claims, and reconsideration of the rejection is respectfully requested.

U.S. Patent Application Serial No. 10/088,107
Response dated June 2, 2004
Reply to OA of March 5, 2004

Claims 1, 2, 4-6 and 8 are rejected under 35 U.S.C. §102(b) as being anticipated by Freeman et al. (U.S. Patent 5,531,934) or Hann et al. (U.S. Patent 5,568,464). (Office action paragraph no. 7)

The rejection of claims 1, 2, 4-6, and 8 under 35 U.S.C. 102(b) is respectfully traversed and reconsideration of the rejection is respectfully requested.

Regarding Freeman et al. '934

Freeman discloses "homopolymers of amino acids, comprise a reaction product of amino acids, amic acids, ammonium salts of monoethylenically unsaturated dicarboxylic acids and optional additional monomers". The homopolymers of amino acids may be included in (A-1) or (A) in the present invention. Examples 19-20 of Freeman were prepared from the reaction of maleic anhydride and ammonia to form polysuccinimide. Examples 21-28 of Freeman were prepared from the reaction of aspartic acid and orthophosphoric acid to form polysuccinimide. These may overlap with (A-1) of the present invention, but not with component (A).

Optional additional monomers, which are exemplified as acrylic acid and methacrylic acid, may be reacted with the above compounds to form a compound which overlaps with an anhydropolyamino acid (A) of the present invention.

Freeman discloses a method of inhibiting corrosion by a detergent including poly(amino acids) having a saturated or ethylenically unsaturated double bond.

However, the present invention discloses a water absorbent material including a copolymer obtained by the radical polymerization of an anhydropolyamino acid having at least one ethylenically

U.S. Patent Application Serial No. 10/088,107
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

unsaturated double bond in a molecule (A) which is a reaction product of an anhydropolyamino acid having no ethylenically unsaturated double bond in a molecule (A-1) and a compound which has an ethylenically unsaturated double bond and a functional group having reactivity with the anhydropolyamino acid in a molecule (A-2), and furthermore has an ethylenically unsaturated double bond (B).

Applicants submit that Freeman et al. does not disclose a copolymer of component (A) with a monomer having an ethylenically unsaturated double bond (B). Applicants therefore submit that claim 1 is not anticipated by the reference.

Regarding Hann et al. '464

The reference discloses poly(amino acids) that are a reaction product formed from at least one compound selected from amino acids, amic acids, ammonium salts of monoethylenically unsaturated dicarboxylic acids, and ammonium salts of hydroxypolycarboxylic acids. The general disclosure in columns 4-5 of Hann et al. regarding the poly(amino acids) is essentially the same as that in columns 4-5 of Freeman et al.

Therefore, Hann et al. also fails to disclose the copolymer of (A) and (B) as in claim 1.

Claims 1, 2, 4, 6, and 8 are therefore not anticipated by Freeman et al. '934 or Hann et al. '464.

U.S. Patent Application Serial No. **10/088,107**
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

Claims 7 and 9 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Freeman. (Office action paragraph no. 11)

The rejection of claims 7 and 9 over Freeman et al. '934 is respectfully traversed and reconsideration of the rejection is respectfully requested.

The Examiner refers to polyaspartic acid as the preferred poly(amino acid). The Examiner apparently considers polyaspartic acid to be a modified version of the polysuccinimide recited in claim 7.

However, this does not represent a disclosure in Freeman et al. of an **anhydropolyamino acid having at least one ethylenically unsaturated double bond** (i.e., component (A)), or a disclosure of a further reaction with a water-soluble monomer having an ethylenically unsaturated double bond (component (B)) to form a copolymer, as required by claim 1.

Applicants have also argued above in regard to paragraph no. 7 of the Office action that there is no disclosure in Freeman et al. of a copolymer corresponding to the copolymer of components (A) and (B) of the present claims. Applicants again note that compound (A-1) in claim 7 is polysuccinimide, but that polysuccinimide itself does not have an ethylenically unsaturated double bond. Claim 4 recites that molecule (A) is a reaction product of components (A-1) and (A-2).

That is, claim 7 of the present invention recites a water absorbent material comprising a copolymer of component (A) which is made from components (A-1) and (A-2), and component (B).

U.S. Patent Application Serial No. **10/088,107**
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

Applicants submit that there is no suggestion in Freeman et al. for the product recited in claim 1 or in any of the claims dependent from claim 1. Accordingly, claims 7 and 9 are novel and non-obvious over Freeman et al.

Claims 17 and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Freeman in view of JP 10-025984 (Note: 10-025984 is the Japanese application number. The publication no. is 11-060729). (Office action paragraph no. 12)

The rejection of claims 17 and 19 is respectfully traversed, and reconsideration of the rejection is respectfully requested.

Claim 17 recites a article comprising a water absorbent material that is a copolymer of components (A) and (B), with components (A) and (B) recited in the same manner as in claim 1. Applicants have argued in regard to paragraph no. 7 of the Office action that Freeman et al. does not disclose any component corresponding to the copolymer of (A) and (B).

JP '984 discloses a cross-linked polyamino acid polymer. However, the abstract of the reference does not disclose or suggest the chemical limitations of claim 17.

Claim 19 depends from claim 17, and the above arguments are also applicable to claim 19.

Applicants therefore submit that claims 17 and 19 are novel and non-obvious over Freeman et al. and JP 10-025984, taken separately or in combination.


U.S. Patent Application Serial No. 10/088,107
Response dated June 2, 2004
Reply to OA of **March 5, 2004**

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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